Abstract of the Disclosure

Reconstructing relative phase information in a misfocused image correction process for misfocused image data having image amplitude information, but lacking relative phase information. A suitable automated or human-operated process is utilized to generate an appropriate power value of a fractional Fourier transform correction operation. This power value is then used to simultaneously calculate the Fractional Fourier transform correction operation and back-calculate corresponding phase restoration information in an iterative or non-iterative environment. The phase restoration information and fractional Fourier transform correction operation may be applied to the image data to correct a desired level of misfocus in image data obtained from conventional lens systems or other fractional Fourier environments within integrated optics, optical computing, astronomical observation, and particle beam systems such as accelerators and electron microscopes, and may be incorporated into film processing, photo editing software and web sites, cameras, VCRs, video editing, surveillance, and conferencing video systems.